

FINAL TECHNICAL REPORT

Research Agreement No. DAAL03-91-G-0201

Microwave and Electronics

**Electrical and Computer
Engineering**

**University of Massachusetts
at Amherst**



1

FINAL TECHNICAL REPORT

Research Agreement No. DAAL03-91-G-0201

DTIC
ELECTE
APR 13 1992
S D D

Research Conducted by

Robert E. McIntosh, Principal Investigator

Department of Electrical and Computer Engineering
University of Massachusetts

for the

This document has been approved
for public release and sale; its
distribution is unlimited.

U.S. Army Research Office
Research Triangle Park, NC

February 1992

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE February 25, 1992		3. REPORT TYPE AND DATES COVERED	
4. TITLE AND SUBTITLE Final Report "Test Equipment for Polarimetric Millimeter-wave Research"				5. FUNDING NUMBERS DAAL03-91-G-0201	
6. AUTHOR(S) Robert E. McIntosh and Philip M. Langlois					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Department of Electrical and Computer Engineering University of Massachusetts Amherst, MA 01003				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U. S. Army Research Office P. O. Box 12211 Research Triangle Park, NC 27709-2211				10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The view, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.					
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited.				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) A summary of the equipment obtained with this grant is discussed					
14. SUBJECT TERMS Test Equipment Network Analyzer				15. NUMBER OF PAGES 2	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL		

SUMMARY

The Microwave Remote Sensing Laboratory (MIRSL) at the University of Massachusetts has obtained the following equipment with the help of this ARO contract:

1. 1 HP 8510C Network Analyzer System, configured for measurements through 110 GHz. This system includes two synthesized sweepers (HP 83631A and 8341B). As a result of an upgrade, MIRSL also obtained a third 8341B for independent operation. This equipment is critical to current and future millimeter-wave sensor development in the laboratory.

The network analyzer has been used in refurbishing a 35GHz FM CW radar and a 95GHz polarimeter. Both instruments will be used during the winter to make radar measurements of snow. During the Spring and Summer of 1992, the 95GHz instrument will be used to characterize the radar response of foliage and other natural targets.

2. 4 HP Model 382 Workstations. Three of these are configured for field operation, with 4 MBytes of RAM and a 200 Mbyte hard drive. Two of these are currently being utilized in MIRSL's 95 GHz Polarimeter systems, and a third for data analysis. The last computer, configured with 32 Mbytes of RAM, is used as the server of MIRSL's HP computer network. These computers are 4-5 times faster than their MIRSL predecessors, and are capable of running "stand alone" HP BASIC (Most MIRSL sensor systems use this language for their data acquisition and processing software).

These new workstations have already proven themselves invaluable in field experiments. The increased speed of these computers permits processing of data in the field. This gives us an immediate indicator of the quality of our data resulting in improved measurements. The more compact packaging of the 382 workstations lends itself to situations where space and weight is at a premium such as aircraft installations.



Dist	Avail and/or Special
A-1	